

REMARKS

This Response is offered in reply to Office Action mailed April 1, 2003. A petition and fee for a one month time extension are enclosed.

In paragraph 3 of the office action, claims 1-3 and 5 are rejected under 35 USC 103(a) in view of the Minowa US Patent 6 142 007 taken with the Yamada US Patent 5 988 307.

Applicants believe the rejection is incorrect. In particular, the '007 patent involves a hybrid automobile having a drive system including an engine 1, generator 15, a dog clutch between the engine 1 and the generator 15, and an electric motor 29 to drive the vehicle. Applicants firstly believe the rejection is incorrect in that the '007 patent does not have a selectable 4X4 mode of operation among other modes of operation wherein there is a need to reduce sensitivity of torque output to accelerator pedal position in the 4X4 mode of operation. The examiner refers to columns 3-4, lines 53-44 and columns 5-6, lines 1-67. However, these sections of the '007 patent describe determining a target drive shaft torque in response to brake pedal force, accelerator pedal angle position, shift lever position, and motor speed wherein the calculated target drive shaft torque is used to determine values of engine torque T_e , motor torque T_m , and generator torque T_g for driving the vehicle in a manner unlike and non-suggestive of Applicants' claims 1-3 and 5.

Moreover, as the examiner himself/herself acknowledges, the '007 patent fails to disclose or suggest controlling torque output of one of the engine and transmission when the vehicle is in one of the other modes of operation as set forth in Applicants' claims.

The examiner cites the '307 patent to make up for the deficiencies of the '007 patent. Applicants would point out that the '307 patent provides a "two-shaft" power transmission apparatus 20 that employs in one embodiment an electric clutch motor 30 that, together with the engine 50, drives the front wheels 26 and 28

and an electric assist motor 40 that drives the rear wheels 27 and 29 in a manner to control distribution of torque thereto; namely, to apply torque to the front wheels 26, 28 and rear wheels 27, 29 at a predetermined distribution ratio (e.g. see column 21, lines 18-23; column 23, lines 5-8; and column 40, lines 20-22; and column 44, lines 1-9 of the '307 patent).

Applicants fail to see how the examiner can even propose combining the "two-shaft" electric clutch/electric assist motor power transmission apparatus of the '307 patent in the power transmission system of the '007 patent given the disparate power transmission systems involved. The cited patents themselves teach away from such a combination as proposed by the examiner.

The examiner's proposed combination of the '307 patent in the '007 patent is not supported by the patents themselves, which involve disparate power transmission systems. Moreover, the proposed combination does not yield Applicants' claims 1-3 and 5 wherein, in combination with the other step recited, Applicants' method involves controlling torque output of one of an engine and transmission of a vehicle when the vehicle is in the 4X4 mode using a calibration table stored in system memory and indicating a relationship of torque output as a function of accelerator pedal position and a speed parameter for reducing sensitivity of the torque output to accelerator pedal position in the 4X4 mode of operation. Neither the '007 patent nor the '307 patent teaches Applicants' claim 1 wherein, together with the other step recited, the torque output of one of an engine and transmission of a vehicle is controlled when the vehicle is in the 4X4 mode using a calibration table stored in system memory and indicating a relationship of torque output as a function of accelerator pedal position and a speed parameter for reducing sensitivity of the torque output to accelerator pedal position in the 4X4 mode of operation.

With respect to depending claims 2-3 and 5, claim 2 recites for a vehicle drive including an automatic transmission, that the torque output of the calibration table comprises a transmission output shaft torque value determined in response to accelerator pedal position and the transmission output shaft speed. The '007 patent describes determining a target drive shaft torque in response to brake pedal force, accelerator pedal angle position, shift lever position, and motor speed wherein the calculated target drive shaft torque is used to determine values of engine torque T_e , motor torque T_m , and generator torque T_g for driving the vehicle in a manner unlike and non-suggestive of Applicants' claim 2. Claim 3 recites that the transmission output shaft torque value of claim 2 is provided for a drive gear mode of the transmission in a manner not disclosed or suggested in the cited patents. Claim 5 recites that the speed parameter is engine speed for a vehicle with a manual transmission. Neither the '007 patent nor the '307 patent discloses or suggests a manual transmission for shifting among forward drive gears and reverse.

Reconsideration of the Section 103(a) rejection of claims 1-3 and 5 is requested.

In paragraph 4 of the office action, claim 7 is rejected under 35 USC 103(a) in view of the Sakai US Patent 4 715 467 taken with the Yamada US Patent 5 988 307.

Applicants believe the rejection of pending claim 7 is incorrect. In particular, at columns 5-8, lines 21-21 of the '467 patent cited by the examiner, the '467 patent provides an infinitely variable belt-drive transmission 2 and an electromagnetic clutch 1 wherein the proportion of torque transmitted by clutch 1 to the rear auxiliary wheels is determined in step 97 (see patent Figure 3b) using a torque transmitting ratio K_2 for the rear auxiliary wheels and is controlled by a duty cycle calculated in step 101 (see patent Figure 3b) in a manner unlike and non-suggestive of Applicants' claim 7.

In addition, the examiner himself/herself acknowledges that the '467 patent fails to disclose or suggest controlling torque output of one of the engine and transmission when the vehicle is in one of the other modes of operation as set forth in Applicants' claim 7.

The examiner cites the '307 patent to make up for the deficiencies of the '467 patent. However, as Applicants pointed out above, the '307 patent provides a power transmission apparatus 20 that employs in one embodiment an electric clutch motor 30 that, together with the engine 50, drives the front wheels 26, 28 and an electric assist motor 40 that drives the rear wheels 27, 29 in a manner to control distribution of torque in a manner to apply torque to the front wheels 26, 28 and rear wheels 27, 29 at a predetermined distribution ratio (e.g. see column 21, lines 18-23; column 23, lines 5-8; and column 40, lines 20-22; and column 44, lines 1-9 of the '307 patent).

Applicants fail to see how the examiner can propose combining the "two-shaft" electric clutch/electric assist motor power transmission apparatus of the '307 patent in the infinitely variable belt-drive transmission/electromagnetic clutch system of the '467 patent given the fundamental differences in these power transmission systems. Surely, the examiner will appreciate that the fundamental differences between the hydraulic transfer clutch system of the '467 patent and the "two-shaft" electric clutch/electric assist motor transmission system of the '307 patent are so disparate as to teach away from combining them in the manner proposed by the examiner.

The '467 patent and the '307 patent both fail to disclose or suggest Applicants' claim 7 wherein, together with the other step recited, the torque output of one of an engine and transmission of a vehicle is controlled when the vehicle is in the 4X4 low mode using a calibration table stored in system memory and indicating a

relationship of torque output as a function of accelerator pedal position and a speed parameter for reducing sensitivity of the torque output to accelerator pedal position in the 4X4 low mode of operation.

Reconsideration of the rejection of claim 7 is requested.

In paragraph 5 of the office action, claims 8-10 and 12 are rejected under 35 USC 103(a) in view of the same references as set forth for rejecting claims 1-2, 5, and 7.

These rejections are believed incorrect for the reasons discussed in detail above as a result.

Reconsideration of the rejections of claims 8-10 and 12 is requested.

In paragraph 6 of the office action, claim 6 is rejected under 35 USC 103(a) in view of the Minowa US Patent 6 142 007 taken with the Yamada US Patent 5 988 307 and the further Taga US Patent 5 873 801.

The deficiencies of the '007 patent and the '307 patent are discussed in detail above. Applicants do not believe the '007 patent and '307 patent are properly combined by the examiner and, even if incorrectly combined as proposed by the examiner, do not yield Applicants' claimed invention. The '801 patent provides a clutch motor 30 coupled to an engine output shaft 56 and an assist motor 40 coupled to drive shaft 22 to output power from an engine to a drive shaft. There is no suggestion in the '801 patent of controlling torque output of one of an engine and transmission of a vehicle when the vehicle is in a 4X4 mode using a calibration table stored in system memory and indicating a relationship of torque output as a function of accelerator pedal position and transmission output shaft speed for reducing sensitivity of the torque output to accelerator pedal position in the 4X4 mode of operation. The cited patents taken alone or together do not suggest such features of Applicants' claim 6.

Reconsideration of the rejection of claim 6 is requested.

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Applicants have added new dependent claim 13 for the examiner's consideration. Favorable action on claim 13 is requested. No fee is believed to be due for new claim 13.

Allowance of pending claims 1-13 is requested.

Respectfully submitted,



Edward J. Timmer

Reg. No. 27 402

enclosure: postal card

CERTIFICATE OF MAILING

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Edward J. Timmer